

Many modification will be apparent to those skilled in the art without departing from the spirit and scope of the invention.

The claims defining the invention are as follows.

- 5     1. A method of transmitting variable length messages on a network from a source having a source address to a destination having a destination address, said method including the steps of:
  - 10   segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said slots including a header field which includes a source identifier field, which is substantially shorter than said destination address, and a message segment;
  - 15   providing a source identifier code in the source identifier field, each source identifier code being uniquely associated with the message to be transmitted;
  - 20   entering said destination address in the message segment of said first slot;
  - 25   transmitting the slots on the network; and
  - 30   controlling reassembly of slots at the destination in accordance with the source identifier code of slots received at the destination.
- 25     2. A method as claimed in claim 1, including the step of providing the type field in the header field of each slot, and coding into the type field a first, second or third code representing a beginning of message, a continuation of message and an end of message respectively and controlling the reassembly of received slots at the destination in accordance with the first, second and third code.
- 35     3. A method as claimed in claim 2, wherein the method includes the step of storing message segments associated with a single message in a buffer at the destination.
- 40     4. A method as claimed in claim 3, wherein if said first code is detected at the destination, the source identifier code is inputted to a comparator and if said second code associated with a subsequently received slot is detected the source identifier thereof is also inputted to the comparator to check for a match, and if a match occurs the message segment of the subsequently received slot is stored in said buffer.
- 45     45. A method as claimed in claim 4, wherein if said third code is detected a reassembled message in the buffer is outputted from the buffer.
- 50     5. A method as claimed in claim 2, including the step of coding into the type field a fourth code representing a single segment message and if said fourth code is detected in a slot received at the destination, the message segment thereof is stored in a single segment buffer.
- 55     6. A method as claimed in claim 5, including the step of providing multiple comparators and buffers at the destination so as to enable simultaneous receipt of a plurality of messages each having its own source identifier code, the message segments of each message being stored in a single buffer.
- 60     7. A method as claimed in claim 5, including the step of concurrently transmitting two or more messages from the source to the destination on the network.
- 65     8. A method as claimed in claim 1, including the step of fixed length slots. said apparatus including:
  - a segmentation machine for segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said

- slots including a header field which includes a source identifier field which is substantially shorter than said destination address, and a message segment,  
coding means for providing a source identifier field 5 including a source identifier code which is uniquely associated with the message to be transmitted,  
means for entering said destination address in the message segment of said first slot, and 10  
a reassembly machine located, in use, at the destination, said reassembly machine including control means for controlling reassembly of slots in accordance with the source identifier codes of the slots.  
10. Apparatus as claimed in claim 9, wherein said 15 coding means provides a type field in the header field of each slot and provides a first, second or third code representing a beginning of message, a continuation of message and an end of message, respectively, and wherein the control means is responsive to said first, 20 second and third codes.  
11. Apparatus as claimed in claim 10, wherein said reassembly machine includes detecting means for de-

detecting in the header fields of the received slots the presence of the third code and for detecting a match between the destination address in the slot and the destination address of the destination, and wherein if there is an address match, the detecting means copies the source identifier code into a comparator means.

12. Apparatus as claimed in claim 11, wherein the  
reassembly machine includes a plurality of said compar-  
ator means to enable concurrent receipt of slots of dif-  
ferent messages.

13. Apparatus as claimed in claim 12, including means  
inputting the source identifier codes of received slots to  
said plurality of comparator means to thereby enable  
15 matching of slots having the same source identifier  
codes.

14. Apparatus as claimed in claim 13, including a plurality of buffers for the message segments of the slots and a buffer selector circuit which selects a particular buffer for receipt of all message segments of slots having the same source identifier code whereby reassembled messages are stored in said buffers.

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--15. A method of transmitting variable length messages on a network from a source to a destination in fixed length slots that include a header field and a message segment, said method including the steps of providing a source identifier field in the header field of each slot, said source identifier field including a source identifier code that is uniquely associated with the message to be transmitted, transmitting the slots on the network, and controlling the reassembly of slots at the destination in accordance with the source identifier codes of the slots received at the destination.--

--16. A method as claimed in claim 15 including the step of providing a type field in the header field of each slot, and coding into the type field a first, second or third code representing a beginning of message, a continuation of message or an end of message respectively and controlling the reassembly of received slots at the destination in accordance with said source identifier codes and the first, second and third codes.--

--17. A method as claimed in claim 15 or 16 wherein the message includes a destination address field that is checked for a match with an address associated with the destination, and wherein the address field is transmitted in the message segment of the first slot used to transmit the message.--

--18. A method as claimed in claim 17 wherein the method includes the step of storing message segments associated with a single message in a buffer.--

--19. A method as claimed in claim 18 wherein if said first code is detected at the destination, the source identifier code is inputted to a comparator and if a second code associated with a subsequently received slot is detected the source identifier thereof is also inputted to the comparator to check for a match, and if a match occurs the message segment of the subsequently received slot is stored in said buffer.--

--20. A method as claimed in claim 19 wherein if said third code is detected the reassembled message in the buffer is outputted from the buffer.--

--21. A method as claimed in claim 16 including the step of coding into the type field a fourth code representing a single segment message and if said fourth code is detected in a slot received at the destination, the message segment thereof is stored in a single segment buffer.--

--22. A method as claimed in claim 20 including the step of providing multiple comparators and buffers at the destination so as to enable simultaneous receipt of a plurality of messages each

having its own source identifier code, the message segments of each message being stored in respective buffers.--

--23. Apparatus for transmitting variable length messages on a network from a source to a destination in fixed length slots said apparatus including:

a segmentation machine for segmenting the message into fixed length slots that include a header field and a message segment, said machine including coding means for providing a source identifier field in the header of each slot, said source identifier field including a source identifier code that is uniquely associated with the message to be transmitted, and a reassembly machine located, in use, at the destination, said reassembly machine including control means for controlling reassembly of slot in accordance with the source identifier codes of the slots.--

--24. Apparatus as claimed in claim 23 wherein said coding means provides a type field in the header field of each slot and provides a first, second or third code representing a beginning of message, a continuation of message or an end of message respectively, and wherein the control means is responsive to said source identifier codes and said first, second and third codes.--

--25. Apparatus as claimed in claim 23 or 24 wherein the message includes a destination address field and wherein the

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segmentation machine is arranged to transmit the address field in the message segment of the first slot of the message.--

--26. A method of transmitting variable length messages on a network from a source having a source address to a destination having a destination address, said method including the steps of:

segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said slots including a header field that includes a source identifier field, which is substantially shorter than said destination address, and a message segment;

providing a source identifier code, in the source identifier field, each source identifier code being uniquely associated with the message to be transmitted;

transmitting the slots on the network; and controlling reassembly of slots at the destination in accordance with the source identifier code of slots received at the destination.--

--27. Apparatus for transmitting variable length messages on a network from a source having a source address to a destination having a destination address in fixed length slots, said apparatus including:

a segmentation machine for segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said slots including a

header field that includes a source identifier field that is substantially shorter than said destination address, and a message segment;

coding means for providing a source identifier field including a source identifier code that is uniquely associated with the message to be transmitted; and

a reassembly machine located, in use, at the destination, said reassembly machine including control means for controlling reassembly of slots in accordance with the source identifier codes of the slots.--